

REMARKS

Claims 2 through 5 have been amended. Claims 6 through 20 have been canceled. Claims 1 through 5 remain in the application. A marked up copy of the amended claims is attached hereto as Appendix A.

Claim 1 was rejected under 35 U.S.C. § 103 as being unpatentable over Asano et al. (U.S. Patent No. 5,078,207). Applicants respectfully traverse this rejection.

U.S. Patent No. 5,078,207 to Asano et al. discloses a heat exchanger and fin for the same. The conventional type offset fin (L-S) shown in FIG. 10 is formed by a cutting device including a plurality of cutters. Since the slit 7 and 8 is formed as the square hole 22 on the thin plate 21, the slit 7 and 8 is precisely formed between the first horizontal wall portion 5 and the second horizontal wall portion 6. Therefore, no remaining portion is existed on the first vertical wall portion 3 and the second vertical wall portion 4. Accordingly, the boundary-layer flow is broken by the slits 7 and 8, so that the local coefficient of heat transfer (Nu) can maintain high volume. The width S of the slit 7 and 8 is preferred to be smaller than the length L of the fin. Asano et al. does not disclose a plurality of corrugated fins each having a base extending laterally and longitudinally in a strip and a connecting member interconnecting the base and another one of the corrugated fins with the connecting member having a longitudinal length greater than a lateral width thereof.

In contradistinction, claim 1 claims the present invention as a turbulator with offset louvers for a heat exchanger including a plurality of corrugated fins each having a base extending laterally and longitudinally in a strip and a connecting member interconnecting the base and another one of the corrugated fins. The connecting member has a longitudinal length greater than a lateral width thereof. The turbulator also includes a plurality of offset louvers spaced along the base and extending longitudinally and generally perpendicular to the base in an

alternating manner. The offset louvers are rolled in a direction parallel to a longitudinal axis of the strip.

The United States Court of Appeals for the Federal Circuit (CAFC) has stated in determining the propriety of a rejection under 35 U.S.C. § 103, it is well settled that the obviousness of an invention cannot be established by combining the teachings of the prior art absent some teaching, suggestion or incentive supporting the combination. See In re Fine, 837 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988); Ashland Oil, Inc. v. Delta Resins & Refractories, Inc., 776 F.2d 281, 227 U.S.P.Q. 657 (Fed. Cir. 1985); ACS Hospital Systems, Inc. v. Montefiore Hospital, 732 F.2d 1572, 221 U.S.P.Q. 929 (Fed. Cir. 1984). The law followed by our court of review and the Board of Patent Appeals and Interferences is that “[a] prima facie case of obviousness is established when the teachings from the prior art itself would appear to have suggested the claimed subject matter to a person of ordinary skill in the art.” In re Rinehart, 531 F.2d 1048, 1051, 189 U.S.P.Q. 143, 147 (C.C.P.A. 1976). See also In re Lalu, 747 F.2d 703, 705, 223 U.S.P.Q. 1257, 1258 (Fed. Cir. 1984) (“In determining whether a case of prima facie obviousness exists, it is necessary to ascertain whether the prior art teachings would appear to be sufficient to one of ordinary skill in the art to suggest making the claimed substitution or other modification.”)

Asano et al. ‘207, either alone or modified, does not teach or suggest the claimed invention of claim 1. Asano et al. ‘207 merely discloses a heat exchanger and fin for the same having a slit formed between a first horizontal wall portion and a second horizontal wall portion. Asano et al. ‘207 lacks a plurality of corrugated fins each having a base extending laterally and longitudinally in a strip and a connecting member interconnecting the base and another one of the corrugated fins with the connecting member having a longitudinal length greater than a lateral width thereof. In Asano et al. ‘207, the lateral width P is greater than a longitudinal length S and not visa versa. Contrary to the Examiner’s opinion, Applicants are not required to state the

criticality of the connecting member having a longitudinal length greater than a lateral width thereof. The Examiner may not, because he/she doubts that the invention is patentable, resort to speculation, unfounded assumptions or hindsight reconstruction to supply deficiencies in the factual basis. See In re Warner, 379 F. 2d 1011, 154 U.S.P.Q. 173 (C.C.P.A. 1967). There is no motivation in the art to modify Asano et al. '207.

Asano et al. '207, if modifiable, fails to teach or suggest the combination of a turbulator with offset louvers including a plurality of corrugated fins each having a base extending laterally and longitudinally in a strip and a connecting member interconnecting the base and another one of the corrugated fins with the connecting member having a longitudinal length greater than a lateral width thereof as claimed by Applicants. The claimed invention is novel and unobvious because a turbulator with offset louvers is provided for a heat exchanger such as a charge air cooler for a motor vehicle. Therefore, it is respectfully submitted that claim 1 is allowable over the rejection under 35 U.S.C. § 103.

Obviousness under § 103 is a legal conclusion based on factual evidence (In re Fine, 837 F.2d 1071, 1073, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988), and the subjective opinion of the Examiner as to what is or is not obvious, without evidence in support thereof, does not suffice. Since the Examiner has not provided a sufficient factual basis, which is supportive of his/her position (see In re Warner, 379 F.2d 1011, 1017, 154 U.S.P.Q. 173, 178 (C.C.P.A. 1967), cert. denied, 389 U.S. 1057 (1968)), the rejection of claim 1 is improper. Therefore, it is respectfully submitted that claim 1 is allowable over the rejection under 35 U.S.C. § 103.

Based on the above, it is respectfully submitted that the claims are in a condition for allowance or in better form for appeal. Applicants respectfully request reconsideration of the claims and withdrawal of the final rejection. It is respectfully requested that this Amendment be entered under 37 C.F.R. 1.116.

Respectfully submitted,

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APPENDIX A**VERSION OF THE CLAIM WITH MARKINGS TO SHOW THE CHANGES**

Please amend claims 2 through 5 as follows:

2. (AMENDED) A turbulator [as set forth in claim 1] with offset louvers for a heat exchanger comprising:

a plurality of corrugated fins each having a base extending laterally and longitudinally in a strip and a connecting member interconnecting said base and another one of said corrugated fins, said connecting member having a longitudinal length greater than a lateral width thereof;

a plurality of offset louvers spaced along said base and extending longitudinally and generally perpendicular to said base in an alternating manner, said offset louvers being rolled in a direction parallel to a longitudinal axis of said strip; and

wherein said offset louvers extend longitudinally a predetermined distance.

3. (AMENDED) A turbulator [as set forth in claim 1] with offset louvers for a heat exchanger comprising:

a plurality of corrugated fins each having a base extending laterally and longitudinally in a strip and a connecting member interconnecting said base and another one of said corrugated fins, said connecting member having a longitudinal length greater than a lateral width thereof;

a plurality of offset louvers spaced along said base and extending longitudinally and generally perpendicular to said base in an alternating manner, said offset louvers being rolled in a direction parallel to a longitudinal axis of said strip; and

wherein said offset louvers are spaced laterally a predetermined distance along said base.

4. (AMENDED) A turbulator [as set forth in claim 1] with offset louvers for a heat exchanger comprising:

a plurality of corrugated fins each having a base extending laterally and longitudinally in a strip and a connecting member interconnecting said base and another one of said corrugated fins, said connecting member having a longitudinal length greater than a lateral width thereof;

a plurality of offset louvers spaced along said base and extending longitudinally and generally perpendicular to said base in an alternating manner, said offset louvers being rolled in a direction parallel to a longitudinal axis of said strip; and

wherein said louvers extend generally perpendicular to said base a predetermined distance.

5. (AMENDED) A turbulator [as set forth in claim 1] with offset louvers for a heat exchanger comprising:

a plurality of corrugated fins each having a base extending laterally and longitudinally in a strip and a connecting member interconnecting said base and another one of said corrugated fins, said connecting member having a longitudinal length greater than a lateral width thereof;

a plurality of offset louvers spaced along said base and extending longitudinally and generally perpendicular to said base in an alternating manner, said offset louvers being rolled in a direction parallel to a longitudinal axis of said strip; and

wherein said offset louvers have a generally inverted “U” cross-sectional shape.